

Notice of Allowability

Application No.

10/678,686

Examiner

John H Le

Applicant(s)

GERLACH, TOBIAS

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ The drawings filed on 03 October 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☒ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 10/20/03, 10/03/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Reasons for Allowance

1. Claims 1-12 are allowed.
2. The following is an examiner's statement of reasons for allowance:

In combination with other limitations of the claims, the cited prior arts fails to teach the steps of determining whether a current ripple expected to be contained in the armature current signal at a probable time point is absent from within a tolerance time band containing the probable time point of the expected current ripple; if the expected current ripple is absent from within the tolerance time band containing the probable time point of the expected current ripple, then determining whether a current ripple is detected after the tolerance time band of the expected current ripple; if a current ripple is detected after the tolerance time band of the expected current ripple and the expected current ripple is absent from within the tolerance time band, then counting the expected current ripple as a detected current ripple; determining the rotational position of the drive shaft based on the counted current ripples; and dynamically changing the length of the tolerance time band as a function of an operating state of the motor as the motor drives the drive shaft, as recited in claim(s) 1.

U.S. Patent No. 6,657,407 discloses a method for determining the position of a movable element driven by a motor shaft includes using a counter to count current ripples contained in an armature current signal of the motor as the motor shaft rotates to drive the element. The position of the element is determined based on the counted current ripples. Upon power to the motor being interrupted such that the motor shaft slows down during the power interruption and upon the counter being prevented from

Art Unit: 2863

counting the current ripples contained in the armature current signal of the motor during the slowdown of the motor shaft, an amount of current ripples expected to be contained in the armature current signal of the motor during the slowdown of the motor shaft is estimated. The position of the element during the slowdown of the motor shaft is determined based on the estimated amount of current ripples. '407 fails to specify the steps of determining whether a current ripple expected to be contained in the armature current signal at a probable time point is absent from within a tolerance time band containing the probable time point of the expected current ripple; if the expected current ripple is absent from within the tolerance time band containing the probable time point of the expected current ripple, then determining whether a current ripple is detected after the tolerance time band of the expected current ripple; if a current ripple is detected after the tolerance time band of the expected current ripple and the expected current ripple is absent from within the tolerance time band, then counting the expected current ripple as a detected current ripple; determining the rotational position of the drive shaft based on the counted current ripples; and dynamically changing the length of the tolerance time band as a function of an operating state of the motor as the motor drives the drive shaft, as now recited in claim 1 of the present invention.

U.S. Patent No. 6,144,179 discloses a measure according to which the counter result of the counted current ripples is only corrected for the absence of an expected current ripple if the current ripple is not identified within a tolerance band surrounding the time point that the current ripple is expected. The tolerance band is fixed. '179 fails to specify the steps of determining whether a current ripple expected to be contained in

Art Unit: 2863

the armature current signal at a probable time point is absent from within a tolerance time band containing the probable time point of the expected current ripple; if the expected current ripple is absent from within the tolerance time band containing the probable time point of the expected current ripple, then determining whether a current ripple is detected after the tolerance time band of the expected current ripple; if a current ripple is detected after the tolerance time band of the expected current ripple and the expected current ripple is absent from within the tolerance time band, then counting the expected current ripple as a detected current ripple; determining the rotational position of the drive shaft based on the counted current ripples; and dynamically changing the length of the tolerance time band as a function of an operating state of the motor as the motor drives the drive shaft, as now recited in claim 1 of the present invention.

U.S. Patent No. 5,877,955 discloses a transducerless position determining system and method of using the same for determining the relative position of a mechanical member or component, which is driven by an electric motor within an electromechanical system. '955 fails to specify the steps of determining whether a current ripple expected to be contained in the armature current signal at a probable time point is absent from within a tolerance time band containing the probable time point of the expected current ripple; if the expected current ripple is absent from within the tolerance time band containing the probable time point of the expected current ripple, then determining whether a current ripple is detected after the tolerance time band of the expected current ripple; if a current ripple is detected after the tolerance time band

Art Unit: 2863

of the expected current ripple and the expected current ripple is absent from within the tolerance time band, then counting the expected current ripple as a detected current ripple; determining the rotational position of the drive shaft based on the counted current ripples; and dynamically changing the length of the tolerance time band as a function of an operating state of the motor as the motor drives the drive shaft, as now recited in claim 1 of the present invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H. Le whose telephone number is 571-272-2275. The examiner can normally be reached on 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

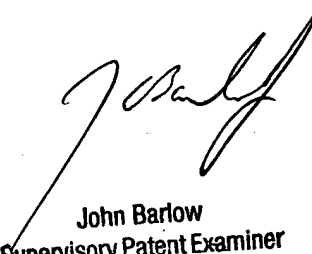
Art Unit: 2863

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John H. Le

Patent Examiner-Group 2863

September 24, 2004



John Barlow
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